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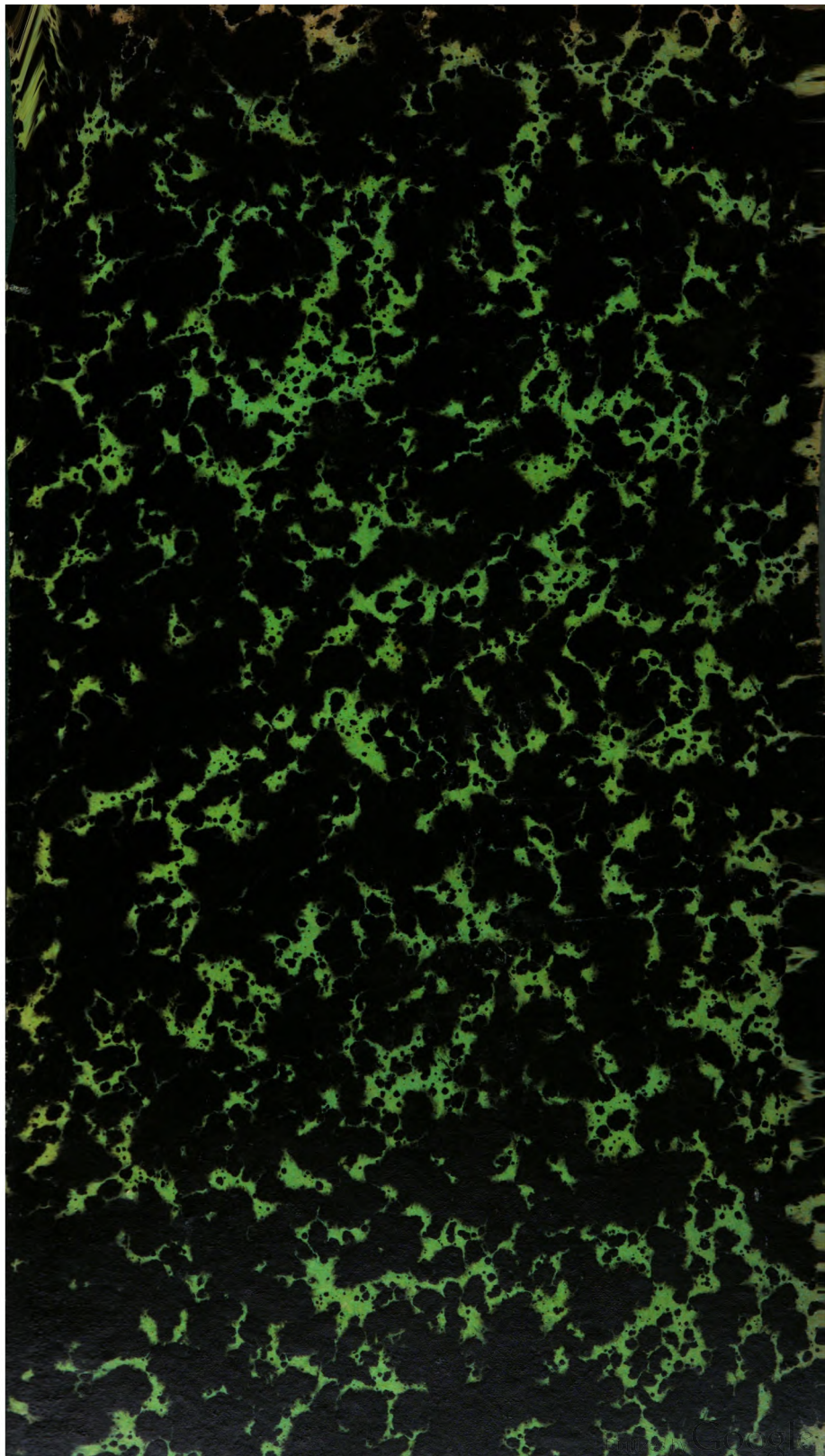
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AND

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27. MAYO WEST.

Ranunculus trichophyllus.
 penicillatus.
 Aquilegia vulgaris.
 Glaucium flavum.
 Chelidonium majus.
 Cakile maritima.
 Stellaria Holostea.
 Malva moschata.
 Geranium lucidum.
 Vicia hirsuta.
 angustifolia.
 Sempervivum tectorum.
 Eryngium maritimum.
 Sium angustifolium.
 Pimpinella Saxifraga.
 Scandix Pecten-Veneris.
 Æthusa Cynapium.
 Asperula odorata.
 Valerianella dentata.

Tanacetum vulgare.
 Carduus pycnocephalus.
 Primula officinalis.
 Convolvulus arvensis.
 Solanum Dulcamara.
 Hyoscyamus niger.
 Veronica hederæfolia.
 Scutellaria galericulata.
 Euphorbia exigua.
 Elodea canadensis.
 Avena pubescens.
 Melica uniflora.
 Bromus asper.
 sterilis.
 Lolium temulentum.
 Agropyron repens.
 Aspidium aculeatum.
 Ophioglossum vulgatum.
 Equisetum maximum.

28. SLIGO.

Aquilegia vulgaris.
 Papaver dubium.
 Glaucium flavum.
 Chelidonium majus.
 Brassica Rapa.
 Cakile maritima.
 Viola odorata.
 Hypericum perforatum.
 humifusum.
 Ononis arvensis.
 Lotus uliginosus.
 Vicia angustifolia.
 Sempervivum tectorum.
 Eryngium maritimum.
 Crithmum maritimum.
 Æthusa Cynapium.
 Valerianella dentata.
 Filago germanica.
 Anthemis Cotula.

Tanacetum vulgare.
 Statice rariflora.
 Solanum Dulcamara.
 Verbascum Thapsus.
 Veronica hederæfolia.
 agrestis.
 Lycopus europæus.
 Origanum vulgare.
 Euphorbia exigua.
 Empetrum nigrum.
 Potamogeton heterophyllus.
 Scirpus fluitans.
 Carex extensa.
 Phleum pratense.
 Glyceria maritima.
 Bromus sterilis.
 Lastrea Oreopteris.
 Equisetum maximum.
 Nitella opaca.

A

29. LEITRIM.

Ranunculus trichophyllus.
penicillatus.
sceleratus.
Aquilegia vulgaris.
Papaver dubium.
Chelidonium majus.
Brassica alba.
Reseda Luteola.
Silene Cucubalus.
Viola odorata.
Polygala vulgaris.
Hypericum perforatum.
Malva moschata.
Ononis arvensis.
Trifolium hybridum.
Potentilla procumbens.
Anthyllis Vulneraria.
Vicia hirsuta.
Lathyrus macrorrhizus.
Sedum anglicum.
Smyrnium Olusatrum.
Pimpinella Saxifraga.
Scandix Pecten-Veneris.
Crithmum maritimum.
Valerianella dentata.

Scabiosa arvensis.
Filago germanica.
Gnaphalium sylvaticum.
Anthemis Cotula.
Tanacetum vulgare.
Carduus pycnocephalus.
Jasione montana.
Lithospermum officinale.
Convolvulus arvensis.
Hyoscyamus niger.
Verbascum Thapsus.
Origanum vulgare.
Euphorbia exigua.
Parietaria officinalis.
Salix repens.
Epipactis latifolia.
Sparganium simplex.
Lemna trisulca.
Scirpus fluitans.
Glyceria maritima.
Festuca rigida.
Bromus sterilis.
Lolium temulentum.
Botrychium Lunaria.
Chara hispida.

30. CAVAN.

Ranunculus trichophyllus.
penicillatus.
sceleratus.
Aquilegia vulgaris.
Papaver Rhæas.
Chelidonium majus.
Brassica alba.
Cerastium tetrandrum.
Hypericum dubium.
Malva moschata.
Ononis arvensis.
Anthyllis Vulneraria.
Vicia hirsuta.
Rosa spinosissima.
arvensis.
Saxifraga tridactylites.
Smyrnium Olusatrum.
Sambucus Ebulus.
Anthemis Cotula.
Tanacetum vulgare.
Arctium minus.

Arctium intermedium.
Carduus pycnocephalus.
Jasione montana.
Vaccinium Oxycoccus.
Lithospermum officinale.
Solanum Dulcamara.
Hyoscyamus niger.
Verbascum Thapsus.
Scrophularia aquatica.
Pinguicula lusitanica.
Chenopodium Bonus-Henricus.
Salix repens.
Orchis pyramidalis.
Sparganium minimum.
Potamogeton heterophyllus.
Carex teretiuscula.
Avena pubescens.
Bromus sterilis.
Lolium temulentum.
Osmunda regalis.

31. LOUTH.

Ranunculus trichophyllus.
 Nasturtium amphibium.
 Geranium lucidum.
 Geum rivale.
 Saxifraga tridactylites.
 Myriophyllum spicatum.
 Sambucus Ebulus.
 Anthemis Cotula.
 Veronica polita.
 Scutellaria galericulata.
 Littorella lacustris.
 Salix purpurea.

Populus tremula.
 Empetrum nigrum.
 Potamogeton heterophyllus.
 perfoliatus.
 Scirpus setaceus.
 Carex lævigata.
 Hornschuchiana.
 Avena pubescens.
 Bromus giganteus.
 Cystopteris fragilis.
 Chara aspera.
 Nitella opaca.

32. MONAGHAN

Aquilegia vulgaris.
 Chelidonium majus.
 Nasturtium amphibium.
 Erophila vulgaris.
 Brassica alba.
 Viola odorata.
 Polygala vulgaris.
 Cerastium tetrandrum.
 Arenaria trinervia.
 Hypericum dubium.
 Malva moschata.
 Geranium lucidum.
 Ononis arvensis.
 Anthyllis Vulneraria.
 Rosa spinosissima.
 Saxifraga tridactylites.
 Myriophyllum spicatum.
 Pimpinella Saxifraga.
 Æthusa Cynapium.
 Solidago Virgaurea.
 Tanacetum vulgare.
 Senecio sylvaticus.
 Arctium minus.
 intermedium.
 Carduus pycnocephalus.
 Leontodon hirtus.

Vaccinium Oxycoccus.
 Primula officinalis.
 Hyoscyamus niger.
 Verbascum Thapsua.
 Veronica hederæfolia.
 polita.
 montana.
 Pinguicula lusitanaica.
 Mentha sativa.
 Origanum vulgare.
 Chenopodium Bonus-Henricus.
 Euphorbia exigua.
 Parietaria officinalis.
 Salix repens.
 Populus tremula.
 Empetrum nigrum.
 Rhynchospora alba.
 Carex vulpina.
 Avena pubescens.
 Festuca elatior.
 Bromus sterilis.
 Lastrea Oreopteris.
 Osmunda regalis.
 Chara aspera.
 hispida.
 vulgaris.

33 Fermanagh.

<i>Ranunculus trichophyllus</i> .	<i>Hyoscyamus niger</i> .
<i>sceleratus</i> .	<i>Verbascum Thapsus</i> .
<i>Papaver Rhæas</i> .	<i>Scrophularia aquatica</i> .
<i>dubium</i> .	<i>Veronica polita</i> .
<i>Brassica alba</i> .	<i>Utricularia vulgaris</i> .
<i>Cerastium tetrandrum</i> .	<i>Pinguicula lusitanica</i> .
<i>Malva moschata</i> .	<i>Origanum vulgare</i> .
<i>Ononis arvensis</i> .	<i>Chenopodium Bonus-Henricus</i> .
<i>Saxifraga tridactylites</i> .	<i>Euphorbia exigua</i> .
<i>Sedum anglicum</i> .	<i>Parietaria officinalis</i> .
<i>Sempervivum tectorum</i> .	<i>Scirpus fluitans</i> .
<i>Scandix Pecten-Veneris</i> .	<i>Carex teretiuscula</i> .
<i>Filago germanica</i> .	<i>Alopecurus pratensis</i> .
<i>Petasites fragrans</i> .	<i>Festuca rigida</i> .
<i>Arctium intermedium</i> .	<i>Bromus sterilis</i> .
<i>Carduus pycnocephalus</i> .	<i>Lolium temulentum</i> .
<i>Jasione montana</i> .	<i>Ophioglossum vulgatum</i> .
<i>Vaccinium Oxycoccus</i> .	<i>Botrychium Lunaria</i> .
<i>Lithospermum officinale</i> .	<i>Chara hispida</i> .

34. Donegal, East.

<i>Ranunculus trichophyllus</i> .	<i>Arctium intermedium</i> .
<i>Papaver Rhæas</i> .	<i>Statice rariflora</i> .
<i>Glaucium flavum</i> .	<i>Primula officinalis</i> .
<i>Nasturtium palustre</i> .	<i>Euphorbia Paralias</i> .
<i>Viola arvensis</i> .	<i>Sparganium minimum</i> .
<i>Hypericum dubium</i> .	<i>Lemna trisulca</i> .
<i>Trifolium hybridum</i> .	<i>Chara aspera</i> .
<i>Oenanthe Phellandrium</i> .	<i>hispida</i> .
<i>Valerianella dentata</i> .	<i>vulgaris</i> .

35. Donegal, West.

<i>Ranunculus penicillatus</i> .	<i>Anthemis Cotula</i> .
<i>Aquilegia vulgaris</i> .	<i>Carduus pycnocephalus</i> .
<i>Glaucium flavum</i> .	<i>Vaccinium Oxycoccus</i> .
<i>Nasturtium palustre</i> .	<i>Hyoscyamus niger</i> .
<i>amphibium</i> .	<i>Verbascum Thapsus</i> .
<i>Viola odorata</i> .	<i>Origanum vulgare</i> .
<i>canina</i> .	<i>Rumex Hydrolapathum</i> .
<i>arvensis</i> .	<i>Parietaria officinalis</i> .
<i>Hypericum dubium</i> .	<i>Elodea canadensis</i> .
<i>Malva moschata</i> .	<i>Lemna trisulca</i> .
<i>Trifolium hybridum</i> .	<i>Carex Hudsonii</i> .
<i>Potentilla procumbens</i> .	<i>Trisetum flavescens</i> .
<i>Sium angustifolium</i> .	<i>Lolium temulentum</i> .
<i>Oenanthe Phellandrium</i> .	

36. TYRONE.

Aquilegia vulgaris.
Erophila vulgaris.
Cochlearia officinalis.
Cerastium tetrandrum.
Arenaria serpyllifolia.
Sagina nodosa.
Malva moschata.
Geranium lucidum.
Ononis arvensis.
Vicia hirsuta.
Saxifraga tridactylites.
Sium angustifolium.
Scandix Pecten-Veneris.
Valerianella dentata.
Anthemis Cotula.
Arctium minus.
Carduus pycnocephalus.
Leontodon hirtus.
Jasione montana.

Primula officinalis.
Scrophularia aquatica.
Thymus Serpyllum.
Salix repens.
Orchis pyramidalis.
Lemna trisulca.
Potamogeton heterophyllus.
Scirpus fluitans.
Carex Hudsonii.
præcox.
distans.
Hornschuchiana.
Glyceria maritima.
Festuca rigida.
Ophioglossum vulgatum.
Selaginella selaginoides.
Chara hispida.
vulgaris.
Nitella opaca.

37. ARMAGH.

Brassica alba.
Geranium lucidum.
Ononis arvensis.
Saxifraga tridactylites.
Sium angustifolium.
Petasites fragrans.
Arctium minus.
intermedium.

Carduus pycnocephalus.
Rumex Hydrolapathum.
Salix repens.
Habenaria bifolia.
Carex teretiuscula.
distans.
Lolium temulentum.
Lastrea spinulosa.

38. DOWN.

Ranunculus penicillatus.
Geranium lucidum.
Parnassia palustris.

Lithospermum officinale.
Carex Hudsonii.
Lastrea spinulosa.

39. ANTRIM.

Glaucium luteum.
Brassica alba.
Crithmum maritimum.

Ruppia rostellata.
Lastrea spinulosa.
Chara hispida.

40. LONDONDERRY.

Glaucium luteum.
Crithmum maritimum.
Anthemis Cotula.
Petasites fragrans.
Arctium minus.
Leontodon hirtus.

Statice rariflora.
Euphorbia Paralias.
portlandica.
Sparganium minimum.
Festuca rigida.
Chara fragilis.

A REMARKABLE FISH
(*LUVARUS IMPERIALIS*)
OBTAINED ON THE SOUTH COAST OF IRELAND.

BY R. F. SCHARFF, PH.D.

ON the 24th July last a very peculiar fish was captured near the "Seven Heads," one of the rocky promontories of the southern coast of the County Cork. It was sent to the market in Cork under the impression that it was a Sturgeon, and was duly disposed of.

Fortunately, Mr. J. E. Longfield, of Enniskean, Co. Cork, had a curiosity to know more about the fish, and with the true instincts of a naturalist he took careful measurements and a photograph of it. He gives the length of the fish as having been 4 feet 6 inches, and the weight about $1\frac{1}{2}$ cwt. The general colour he describes as a metallic reddy orange, lighter underneath, which was easily rubbed off, leaving the fish of a silvery colour all over. The tail and lateral fins were of the brightest scarlet—almost vermilion. The first ray of the dorsal fin was extended into a most peculiar looking flexible tendril about one foot long with a similar extension on the ventral fin. The mouth was small, with very small if any teeth. Both dorsal and ventral fins were composed of a series of semi-detached fins, and there was a slight projection or keel at each side of the body near the tail.

When these descriptions and the photograph arrived at the Museum during my absence, Mr. Nichols identified the fish as *Luvarus imperialis*—an exceedingly rare species, which, like most other rare animals, possesses none but the scientific Latin name. It had not hitherto been met with in the Irish seas.

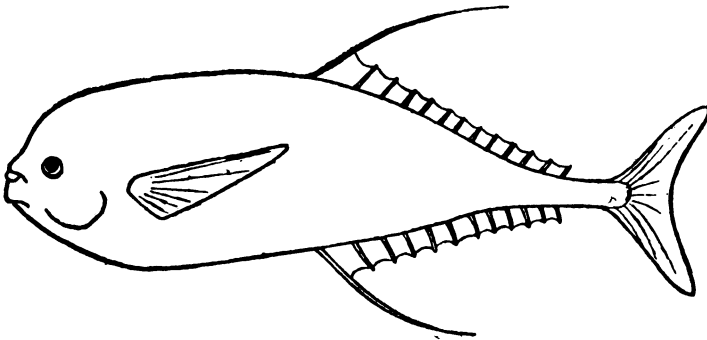
Although Mr. Longfield's description differs in some important respects from the original one of the eminent French zoologist Rafinesque, I feel no hesitation in agreeing with Mr. Nichols's determination of the fish.

One of the most striking differences between the original description and that of Mr. Longfield, is that the latter describes the dorsal and ventral fins as being composed of a series of smaller fins. However, in carefully examining the photograph with a lens one perceives clearly—certainly in

the case of the anal (Mr. Longfield's ventral fin)—that this supposed series of small fins was produced after death, and that it was originally one connected fin.

Another difference from the original was the fact of the first dorsal and the first ventral fin rays being elongated in our Irish specimen and not so in the other. This, however, is not of serious importance, as in many species of fish the mature male differs from the female by the possession of a similar elongation of the fin ray. The character may, therefore, be looked upon as a sexual one.

Luvarus imperialis was first taken on the coast of Sicily by Rafinesque, and described by him in 1808. It has since been noticed again in the Mediterranean, on the west coast of France, at Madeira, and on the coast of Cornwall. There are apparently only three specimens in existence in museums, one in the Museo Civico at Genoa, another in the Musée d'Histoire Naturelle of Paris, and a third in the British Museum. It is to be greatly regretted that the first Irish specimen has not been preserved; at the same time it is satisfactory to know that we possess such a careful description of the fish as that of Mr. Longfield's, who, it is to be hoped, will take steps to secure the next specimen he meets with for one of the Irish museums.



Luvarus imperialis. One-fourteenth natural size.

Mr. Longfield's photograph not having proved quite suitable for reproduction, I have had a copy drawn replacing the pectoral fin in its right position and restoring the dorsal and anal fins to what I considered was their original structure.

Science and Art Museum, Dublin.

SOME NOTES ON THE FLORA OF GLENARIFF, CO. ANTRIM.

BY DEAN C. F. D'ARCY, D.D.

DURING a short stay at Parkmore, at the head of Glenariff, in the earlier part of the summer, I was able to make a few observations of the more interesting plants of that part of Co. Antrim. The flora of the glen is exceedingly rich. Perhaps there is no spot in Ireland where the more beautiful of our common spring flowers grow in such abundance, or bloom so profusely. A striking ornament in May is the Bird Cherry (*Prunus Padus*), which, in one place, grows in a thicket so obviously natural that all suspicion of the cunning hand of the planter is impossible.

The lower part of the glen is broad and open, but bounded on both sides—north and south—by steep grassy slopes clothed in part with dense Hazel scrub, and crested with long lines of precipitous crags. These cliffs are, in most places, difficult and dangerous to climb; the treacherous trap rock disintegrates at a touch, often in the most unexpected manner. Here and there magnificent gorges seam the cliffs from top to bottom. In its upper part the glen divides into two narrow ravines. Of these, the northern is by far the richer. Here it is that the spring flowers bloom in greatest abundance; and here, also, the natural wood is most diversified.

There are two other regions of considerable botanical interest which must be connected with Glenariff: a circle of boggy mountains surrounding its upper extremities and supplying the water of its river, and a series of plateaux of dry pasture varying in height from 1,000 to 1,200 feet above sea-level, supported upon the summits of the cliff-walls which bound the broad lower glen.

On the cliffs several interesting plants were seen. Here the pretty *Arenaria verna* is abundant, and *Saxifraga hypnoides* frequent, especially in the gullies and gorges. In a wet gully on the south side, about 900 feet above sea-level, *Hymenophyllum unilaterale* was found in considerable quantity. This seems to be a new station. Along a mile or so of the north cliffs *Juniperus nana* grows in great abundance. It is also to be found, though not so abundantly, on the south cliffs. This

plant was reported from Glenariff by Templeton, and, in recent years, by Mr. Praeger. But, perhaps, the most interesting "find" in this part of the glen was the Yew (*Taxus baccata*). It was reported from here in 1795 by Templeton (see *Flora of North-East Ireland*, p. 133), who found it, as he tells us, "among rocks at Glenariff on the north side, about half way up the glen." He adds, "It is now reduced to a few stunted plants growing out of the crevices of the rocks." It has never been reported since Templeton's time; and the authors of the *Flora of North-East Ireland* considered it extinct in the county in 1888. I am happy to say that I found two trees growing very high up on the face of the cliff, in the part of the glen described by Templeton. One of them is evidently very old, and, though of stunted growth, has a trunk of considerable thickness. It is not possible to get quite close to it without a rope; but I was able to get near enough to be absolutely certain of its identity. Mr. N. Colgan visited the spot since, and confirmed the identification.

All along the north side of Glenariff, wherever the trap has become thoroughly disintegrated, *Orobancherubra* grows freely. High up the cliffs, to the very summits, may be seen the spots of rich red colour, which mark its presence so distinctly. In one place, close to the high road—on some warm slopes of crumbling rock—this plant is to be found in an abundance which is probably unequalled.

Turning from the cliffs to the grassy plateaux above them, I have to note the Moonwort (*Botrychium Lunaria*) as very abundant, and growing to larger dimensions than I have seen elsewhere. It is not too much to say 'that the Moonwort will be found all round Glenariff, in almost every suitable spot, if one only takes the trouble to look for it. The Adder's Tongue (*Ophioglossum vulgatum*) I found in one place only, not far from Parkmore House. In the same neighbourhood, *Cystopteris fragilis* grows in profusion.

On the grassy plateaux were also found *Lycopodium clavatum* and *L. alpinum*. The former, already reported from Evish and from Slievenanee in this neighbourhood, I found in great quantity on the north side of the glen, half-way between Parkmore and Lurigethan. The latter I saw in many places, some of which have been already reported by other observers.

In the glen the following interesting plants were observed:—*Rubus saxatilis*, *Pyrola minor* in several places (already reported from Glenariff by Rev. S. A. Brenan), *Sedum rupestre*—growing on natural rocks, far from cultivation, and looking native—*Epilobium angustifolium* and Beech Fern, luxuriant in many places.

On the boggy mountains surrounding the upper glen some interesting plants were observed. *Vaccinium Oxycoccus* (Cranberry)—first found in this neighbourhood, some years ago, by the Rev. S. A. Brenan, and noted by me in several places—was this year remarkable for an extraordinary morbid development of its young shoots. Specimens having been sent to Mr. Greenwood Pim, the strange growth was found by him to be due to a microscopic fungus, *Calyptospora gæppertiana*, which is common in America on *Vaccinium Vitis-idea*. Here, too, *Carex irrigua* was first discovered in Ireland by Miss E. D'Arcy, as already recorded in the September issue of this Journal.

On Slievenanee I found *Salix herbacea* growing in considerable quantity about some rocks near the little cairn at the north end of the summit. This plant was found here by Mr. Templeton, as reported in *Flora Hibernica*, but does not seem to have been noted in the locality since. On an old disused road, high up on the side of Trostan, *Anthemis nobilis* (Chamomile) grows in some abundance.

Perhaps it may be of interest to mention that in Glen ballyemon, not far from Retreat, I found *Lastrea Oreopteris* and *L. amula*, two ferns which, though not exactly rare in Ireland, are far from common in Co. Antrim.

Belfast.

THE MALE OF VESPA AUSTRIACA.

BY DENIS R. PACK-BERESFORD, D.L.

IN the *Irish Naturalist*, vol. vi, p. 285, an interesting article appeared by Mr. H. K. G. Cuthbert on the rarest of Irish wasps — *Vespa austriaca*. In that article, as also in Mr. Edward Saunders' "British Hymenoptera Aculeata," it was stated that females only of this wasp had been found in Great Britain. Since then, however, the Rev. O. P. Cambridge recorded in the *Irish Naturalist*, vol. vii, p. 18, the capture of one male in Dorsetshire, and in vol. viii, p. 163, Mr. C. W. Buckle records the capture of a single male in Co. Donegal in August, 1898. Two or three specimens have also been taken, Mr. Saunders tells me, in Scotland, but these, with the exception of Mr. C. Robson's discovery of males and females in the nest of *V. rufa* (*Science Gossip*, vol. v., 1899, p. 69), are the only instances on record of its capture in these islands.

It is, therefore, interesting to be able to record its occurrence in considerable numbers. On the morning of August 7th this year I caught a wasp, which I identified as a male *V. austriaca*, and knowing from experience that where one male is caught there are often more, I began a diligent hunt, and was rewarded by catching 17 more on the same afternoon and 30 on the following day. After that I caught few nearly every day till August 25th—my total in all amounting to 128 specimens.

Both Mr. Carpenter and Mr. Edward Saunders, to whom I sent specimens, have been so kind as to examine them and confirm their identity. All were caught in one part of my grounds—a piece of rough grass, some two acres or so in extent, in which are planted specimen conifers of various kinds, and which is nearly surrounded by fir plantations. I caught them hawking round nearly all the young specimen trees, but *Abies Nordmanniana* seemed to be specially favoured. One young specimen in particular of this tree was, during nearly the whole of August, covered with workers of *V. vulgaris* and *V. rufa*. I caught a few males of *V. rufa* at the same time, and succeeded in finding three nests of that species in the immediate neighbourhood, but these contained nothing but *V. rufa*, as I took all three nests, and examined every wasp in them.

The nest from which the *V. austriaca* were coming must have been very near, as I found them nowhere else, but my most diligent search failed to discover it.

Fenagh House, Bagnalstown.

MOSSES NEW TO IRELAND.

BY REV. H. W. LETT, M.A.

THREE fine mosses have recently been collected in Ireland which appear to be new to the country. Their occurrence in Ireland is interesting, as hitherto they have been known in the British Isles only in a few localities in Scotland.

Campylopus Shawii, Wils.—Adrigole, near Glengarriffe, Co. Cork, June, 1896; Rev. C. H. Binstead.

Campylopus Schimperl, Wils.—By the side of the stream, at 1,400 feet, in Derrymore Glen, near Cahir Conree Mountain, Co. Kerry, April, 1899; Rev. H. W. Lett and D. M'Ardle.

Dicranum uncinatum, C. M.—On rock faces, at 1,200 ft., by the sides of two streamlets on the south-east face of Nephin Mountain, Co. Mayo, May, 1901; Rev. H. W. Lett and D. M'Ardle. This plant was growing in luxuriant cushions in a few places on the shaded sides of the little ravines.

To the above may be added the following notes on three other and rare mosses which have been discovered for the second time in Ireland, and all in new stations:—

Campylopus subulatus, Schpr. — [Cromagloun, Killarney, Co. Kerry, June, 1885; Schimper and Wilson.] Near Glengarriffe, Co. Cork, June, 1900; Rev. C. H. Binstead and Dr. Braithwaite.

Hypnum dilatatum, Wils.—[There does not appear to be any record of this from Ireland, except that in Dr. Braithwaite's *Brit. Moss Flora*, vol. iii., p. 57—Torc Waterfall, Killarney, 1865, Capt. Hutton.] Connor Hill Pass, near Dingle, Co. Kerry, September, 1897; Rev. H. W. Lett and D. M'Ardle.

Hypnum fluviatile, Swartz.—[Ballinhassig, near Cork, in Mackay's *Flora Hibernica*, pt. 2, p. 38.] On rocks in Bann River, at Corbet Mills, two miles east of Bannbridge, Co. Down, July, 1900; Rev. H. W. Lett and C. H. Waddell.

Aghaderg, Loughbrickland.

WASPS IN COUNTY WICKLOW.

BY R. M. BARRINGTON AND C. B. MOFFAT.

FROM 1893 to 1901 the number of queen wasps killed at Fassaroe amounts to 1,155. The following are the numbers for each year (none were killed in 1895 owing to change of gardeners), showing in what proportion the different species prevail:—

YEAR.	<i>Vespa vulgaris.</i>	<i>V. germanica.</i>	<i>V. rufa.</i>	<i>V. sylvestris.</i>	<i>V. norvegica.</i>	<i>V. austriaca.</i>	TOTAL.
1893 (during May), .	39	—	12	1	7	3	62
1894 (to June 6th), .	42	8	2	15	13	—	80
1896 (to May 28th), .	82	6	4	21	16	1	130
1897 (to June 17th), .	60	25	23	69	23	1	204
(June 18th to 24th), .	—	—	—	—	—	3	
1898 (to July 2nd), .	26	—	—	22	3	—	51
1899 (to May 18th), .	17	2	4	12	—	—	235
(May 19 to 31), .	36	5	12	17	6	—	
(May 31 to June 13), .	52	4	31	18	5	2	
(June 14 to July 9), .	4	—	3	1	—	4	
1900 (first lot), .	89	25	8	6	12	—	189
(second lot), .	26	10	1	3	4	—	
(third, July 2nd), .	3	—	—	1	—	1	
1901,	112	30	19	21	20	2	204
Total	588	115	119	207	109	17	1155

From the above table it appears that *Vespa vulgaris* slightly outnumbers the remaining five species added together, while *V. sylvestris* comes second in order of numerical preponderance; *V. rufa*, *V. germanica*, and *V. norvegica* rank respectively third,

fourth, and fifth, but are very nearly equal in numbers. The percentages are :

vulgaris.	germanica.	rufa.	sylvestris.	norvegica.	austriaca.
50·9	10	10·3	17·9	9·4	1·5

It does not follow that these figures give an accurate idea of the relative strength of each species in autumn, because some probably have larger nests than others ; but they may be taken as representative of the numbers of the *queens* in early summer, as far as it is possible to take a satisfactory census in one locality.

The proportions have varied to an extraordinary degree in different years. This may be seen from the following table, showing for each species what percentage of the total number killed belonged to it in each year :—

YEAR.	V. vulgaris.	V. germanica.	V. rufa.	V. sylvestris.	V. norvegica.	V. austriaca.
1893, . . .	62·9	0	19·4	1·6	11·3	4·8
1894, . . .	52·5	10	2·5	18·7	16·2	0
1896, . . .	63·1	4·6	3·1	16·2	12·3	0·8
1897, . . .	29·4	12·3	11·3	33·8	11·3	2·0
1898, . . .	51·0	0	0	43·1	5·9	0
1899, . . .	46·4	4·7	21·3	20·4	4·7	2·6
1900, . . .	62·4	18·5	4·8	5·3	8·5	0·5
1901, . . .	54·9	14·2	9·3	10·3	9·8	1·0

Vespa vulgaris has held the first place every year, except 1897, when *V. sylvestris* outnumbered it. The second place is usually held by *V. sylvestris*, but was taken by *V. rufa* in 1893 and 1899, and by *V. germanica* in 1900 and 1901. *Vespa norvegica*, though the scarcest (except *V. austriaca*) of the six, has never been so rare as *V. sylvestris* was in 1893, *V. germanica* in 1893 and 1898, and *V. rufa* in 1894 and 1898.

Vespa germanica fluctuates more than *V. vulgaris* in numerical strength. Of the total number killed (115), 90 were obtained in the three years 1897, 1900, and 1901, and only 25 in the remaining five years. *V. germanica* is said by Mr. Saunders to be almost as common as *vulgaris* in the south of England.

It is well known that *Vespa rufa* occurred in unusually large numbers in many parts of Ireland in 1899 (see *Irish Naturalist*, vol. viii., pp. 163, 208, and 209). The number of queens killed at Fassaroe that year amounted to 50; while in the course of the remaining seven years only 69 were killed altogether. *V. rufa* did not, however, prevail here to nearly so great an extent as it did in parts of Counties Carlow, Derry, and Down, according to notes furnished by Mr. D. R. Pack-Beresford (*I. N.*, vol. viii., p. 209); for out of a total of 361 queen wasps killed by that gentleman, as many as 261—or 72 per cent.—were of this species, whereas its percentage at Fassaroe was only 46½.

Of the two tree-wasps, *Vespa sylvestris* and *V. norvegica*, the former is much the more common in this locality—unless the habits of the two differ so largely as to affect the proportions captured, which does not appear probable. It may be pointed out that the queens of these two species, added together, amount to more than a fourth (27 per cent.) of the whole number; a very large proportion, considering how much more numerous are the nests of the ground-building species.

Concerning the rare *Vespa austriaca*, of which altogether 17 specimens have been obtained here in the eight years treated of, it is important to note that in 1897, 1899, and 1901 the wasps killed were forwarded for examination in two or more instalments, each instalment consisting of the wasps killed up to the date of sending; and in each case it was found that *V. austriaca* occurred chiefly in the later lots. Thus, out of 201 wasps killed up to June 17th, 1897, only one was referred to that rare species; but three killed between June 18th and 24th were all *V. austriaca*. In 1899 two lots of 35 and 76 respectively, killed before the end of May, consisted solely of the more common kinds; but 112 killed in the first thirteen days of June comprised two *V. austriaca*; and a further consignment of 12 between June 14th and July 9th contained 4 specimens of the rarity. Again, in 1900, the only specimen of *V. austriaca* obtained turned up in the last lot forwarded for

examination, about July 2nd; whereas two previous lots, reaching the large total of 184 wasps, had contained none of that species. These figures tend to show that the last fortnight of June is the best time for collectors to look out for this very interesting Irish wasp.

There is a remarkable contrast between the total numbers of wasps killed in the two consecutive springs of 1898 and 1899. In the former year only 51 were obtained: in the latter 235. The average number per year is 144. It is possible that the wetness of the spring of 1898 (when April and May registered $9\frac{1}{2}$ inches of rain at Fassaroe) may account for the scarcity in that year. The same period in 1894 had a still heavier rainfall, nearly 10 inches; but in that season also the number of queen wasps killed (80) was considerably under the average. In the dry spring of 1893 the total figure is only 62; but this proves nothing, as in that year few were looked for after the beginning of May.

The majority of the wasps were in most years killed on young shoots of hawthorn, and chiefly towards evening. On one day in early June, in 1899, the gardener killed as many as 74 on the raspberry canes; and it would appear from the figures corresponding to this period in the table, that *Vespa vulgaris* and *V. rufa* were probably the species to which most of these belonged.

Mr. Edward Saunders says in letter, 1897:—

"I do not know of any character which distinguishes the nests of "*sylvestris* and "*norvegica* apart; but then I have, unfortunately, few opportunities of seeing nests.

"Please look for the ♂ of *V. austriaca* (*arborea*) as the autumn comes on, as that has only once been recorded from Britain. It may be known "like the ♀ by having no cheeks between the eyes and mandibles, and "having black-haired tibiae. *Sylvestris*, &c., have black-haired tibiae, but "then they have long cheeks. I should have expected, on account of "the short cheeks, that *austriaca* would have associated with *vulgaris* or "*germanica*, or probably *rufa*, which last it specially resembles. "*Austriaca*,¹ like the ♀ *Psithyri*, probably hibernates in an impregnated "state, and comes out with the other Wasps. It looks as if it lives at "large late in the season, when the queens of other species are attending "to their communities."

¹ This was written before Mr. Robson's discovery placed beyond all doubt the inquiline habit of *austriaca* in the nests of *rufa*, and before Mr. Cuthbert obtained the first Irish specimen of the male.

At Fassaroe the nests of the tree-and bush-building wasps are not nearly so common as thirty to forty years ago, and those which nest in the ground appear to have increased during the same interval. As no specimens were preserved in the earlier years, the species cannot be referred to more definitely.

To Mr. Carpenter and Mr. Edward Saunders we are indebted for the identification of the specimens tabulated in this paper. They would all be called "wasps" by the general public—who only recognize one species. One of the most recent and far-fetched applications of the name "wasp," which has come under our notice, occurred in the letter of a Light-keeper who forwarded "a remarkable-looking wasp" on August 25th from Old Head, Kinsale. It was a Death's-head Moth!

Fassaroe, Bray.

NOTES.

BOTANY.

The Moss Exchange Club.

We have received the Sixth Annual Report of the Moss Exchange Club, which shows steady progress. The number of members is now thirty-seven. The copious critical notes and reports on plants sent in to the distributor should be of much value to students of bryology.

Another station for *Lastrea Thelypteris* in Co. Westmeath.

This interesting and rare fern grows luxuriantly over a small area of the very wet marsh at the south-east end of Lough Owel. I noted it there last August. Some of the fronds which I gathered were considerably over two feet in length.

CHARLES F. D'ARCY.

Belfast.

***Hypopithys multiflora* near Roscommon.**

Mr. S. V. Coote sends me fresh specimens of this rare plant from his demesne, Carrowroe Park, Roscommon, collected on September 16; he describes it as being "fairly common in the beech and fir woods" there.

R. LLOYD PRÆGER.

Dublin.

ZOOLOGY.**Selection of Plants by Animals.**

A Cottony scale-insect, which Mr. R. Newstead has kindly identified as *Cryptococcus fagi*, occurs in the Trinity College Botanic Gardens. It is curious in its habitat. We have a Weeping Beech that was originally grafted upon the Common Beech as a stock, and the curious fact is that the *Cryptococcus* exists on the stock portion *only*, rarely, if ever, spreading over the grafting-line, that is to say, on to the adjacent bark of the scion, or weeping variety above.

This is, of course, only one of the countless instances where "selection" of the most discriminating kind is made by insects, molluscs, and even fungi, as to their food or habitats.

We grow here, for example, two dwarf Narcissi, which ordinary visitors often mistake for the same plant, though an expert at once can see a difference.

The common Grey Slug also discriminates between them, and eatsoff the flowers of the one (*N. nimar*), while rarely or never touching those of the other (*N. narrus*). There are varieties of fruiting Hollies here which closely resemble each other in early winter, and yet the endemic fruit-eating birds of the garden—Blackbirds, Thrushes, etc., and the Mistle Thrushes Fieldfares, etc.—that come down from the hills on approach of frost and snow, clear off every berry on some bushes, and leave those of others untouched! In this case my own experience tells me that they eat those berries containing most sugar, and leave the acid or astringent ones alone as long as possible short of absolute starvation.

But as even the plants show great discrimination in selecting food, support, shelter, shade, or sunshine, etc., one need not wonder at beings higher in nature's scale doing so as well.

F. W. BURBIDGE.

Dublin.

***Agrotis cinerea*—a new Irish Moth.**

I captured at light, on June 21st, 1897, at Tullylagan, Co. Tyrone, what I supposed at the time was a variety of *Agrotis corticea*.

Subsequently examining it more closely, I came to the conclusion that it could hardly be a variety of that species, as the markings did not agree in any way with that insect. On coming to Dublin I brought it to the Kildare-street Museum, to make sure about it, where Mr. Carpenter identified it as *Agrotis cinerea*. It agrees more with the continental than with the British specimens in the Museum collection.

T. GREER.

Blackrock, Co. Dublin.

Abundance of *Vanessa io* in 1901.

The many references to the Peacock Butterfly in the current volume of the *Irish Naturalist*, pointing to its local or relative abundance, or to its appearance in places where it was hitherto rarely or never seen, show that some of the seasonable conditions which favour insect development must have lately affected this interesting species.

Round Sligo, between July 18th and 22nd, I noticed it in great numbers, in fact it was there by far the commonest of the coloured butterflies. Likewise about Limerick, early in August I saw it frequently; and in Co. Kerry, along the Feale at Ballinruddery, and in the woods of the Knight of Kerry's demesne.

At the latter place the Silver-washed and Greasy Fritillaries were also numerous, but for every single example of these species there were at least half-a-dozen Peacocks.

H. G. CUTHBERT.

Dublin.

Sirex gigas, L., in Co. Down.

I captured a fine female example of the above large Saw Fly on the 20th inst., at rest on the trunk of a felled fir-tree in Clandeboy demesne near Bangor. I was greatly surprised to meet with this extraordinary insect, which is, I believe, of rare occurrence in Ireland.

L. H. BONAPARTE WYSE.

Bangor.

[*S. gigas* can hardly now be considered a rare insect in Ireland. Every summer several specimens came to the Dublin Museum from all parts of the country.—G. H. C.]

Habits of Humble Bees.

My little son has read with delight Mr. Burbidge's note in the *Irish Naturalist* for September, on the behaviour of two bees. He wishes me to write and ask—

1st. Why Mr. Burbidge calls them Humble bees and not Bumble bees?

2nd. Why should a queen bee that was already wet and chilled require more cold water?

3rd. Why did the worker bee fight viciously with the queen to whose wants it was so assiduously attending a moment previously?

4th. What did the worker bee "fetch" the water in?

JAMES R. FITZGERALD.

High-street, Clonsilla.

I will answer in all seriousness the four questions that have been propounded.

1. I called *Bombus terrestris* a "Humble Bee," because that appears to be the authentic designation of which "Bumble Bee" may possibly be only a corruption.

2. Possibly the queen bee did not want more water, it might be that the worker only wished to use some for moistening the wings that adhered to the body.

3. I am not sure that the worker bee fought viciously with the queen bee, it may have been *vice versa*, and that the worker was merely acting as it did in self-defence. I said that they "seemed to fight viciously with each other," not that either one or the other actually did so.

4. The worker bee to all appearance carried the water by the aid of its jaws (maxillæ).

F. W. BURBIDGE.

Dublin.

Entomological Notes from Abbeylax.

During the present year I took the following beetles amongst many more in this locality:—*Chlanius vestitus*, Payk. *Agabus bipustulatus*, L.—on a garden hedge. *Halysia conglobata*, L. *Spharidium bipustulatum*, F.—one perfectly black specimen. *Necrophorus rufator*, Er. *Cychramus fungicola*, Heer. *Sinodendron cylindricum*, L.—numerous specimens in rotting wood. *Meloe proscarabeus*, L.—widely distributed from April to early June. *Adimonia tanacetii*, L.—apparently widely spread here. *Galerucella viburni*, Payk.—numerous in the woods.

J. MONTGOMERY BROWNE.

Abbeylax.

Reported occurrence of the Red-throated Pipit in Ireland.

In the *Zoologist* for July, Mr. F. Coburn writes fully concerning two specimens in his possession, which he considers undoubtedly referable to this species—the one shot by himself in Mayo in 1895, the other by Mr. H. Elliott Howard in Donegal in 1898. We have not noticed this record earlier, since we understand that our leading Irish ornithologists are not yet satisfied regarding the identity of these specimens. We trust that further investigation will definitely determine whether *Anthus cervinus* is to be added to the Irish list.

Turtle Dove in Co. Dublin.

On Bank Holiday, 5th August, I obtained a Turtle Dove (male) in adult plumage at Portmarnock, Co. Dublin. The bird was alone; it would be interesting to find this species breeding in Ireland, as most of the specimens have been obtained early in spring and in the autumn, the latter almost invariably being immature birds.

W. J. WILLIAMS.

Rathgar.

Wood Sandpiper in Co. Dublin.

On the 19th of August, whilst beating a small piece of marsh ground near Sutton for Snipe, a bird rose uttering a peculiar note which I was not familiar with. On shooting it I was much pleased to find it was a Wood Sandpiper in immature plumage. This, I believe, is the first occurrence of this rare Sandpiper in Co. Dublin, and the sixth occurrence in Ireland—one having been obtained in Calary Bog, Co. Wicklow, 23rd August, 1885, and two shot by Dr. Knox in same locality on the 3rd August, 1896.

W. J. WILLIAMS.

Rathgar.

Black-tailed Godwits in Co. Wexford.

On the 6th of August inst., my friend, Mr. A. L. Otway, shot on the mud-flats of Wexford Harbour a Black-tailed Godwit, which he kindly sent to me. Its head and neck were reddish, its breast barred, and its back mottled with black, in the plumage of summer. I have sent it to Messrs. Williams and Son for the Museum of Science and Art, Dublin.

On the 9th of August Mr. Otway shot another bird of the same species, which he sent to the Museum direct.

Both specimens were shot on the slob-lands near the mouth of Wexford Harbour, and many others were observed. I am informed by Mr. Otway that on two occasions he saw flocks of twenty to thirty, but that in the majority of instances there were single birds. The white at the base of the tail and the white base of the secondaries, described by Mr. Warren, as easily distinguishing the Black-tailed Godwit, were noticed

After they were first seen these birds rapidly diminished, and by the 20th of August they had become very scarce.

The early date at which the first was shot, its occurrence in summer dress, and the observation of flocks which appeared to be of the same species are facts of interest, especially in view of the late discussion in the *Irish Naturalist* by Mr. Barrett-Hamilton and Mr. Warren.

It is, however, to be observed that the flocks reported to the former, were seen in winter, and were not fully identified as being of the same species as the specimen he obtained.

R. J. USSHER.

Cappagh, Co. Waterford.

REVIEWS.

ALL ABOUT IRELAND.

Ireland: Industrial and Agricultural. Handbook for the Irish Pavilion, Glasgow International Exhibition, 1901. Dublin: 1901. Department of Agriculture and Technical Instruction for Ireland. Pp. 290. With numerous illustrations. Price 2s. 6d. net.

The new "Department of Agriculture and Technical Instruction for Ireland" is to be congratulated most heartily, on the excellent "official handbook" to the Irish Pavilion at the Glasgow Exhibition recently published.

The Editor, Mr. William P. Coyne, says in his preface:—"It was thought well to take the opportunity afforded by the publication of such a work, to make it something more—indeed, something other—than an ordinary guide to the Irish Pavilion. The book opens with a description of the general geological and physiographic features of the country, followed by articles on the climate, flora, and fauna of Ireland. An analysis of the economic distribution of the population is then given, preliminary to an account of the internal means of communication and the banking facilities of the country. The next section is devoted to agricultural and technical education and art instruction. As leading up to the functions of the State Departments in regard to agriculture and industry, an account is given of the splendid work done by some of the great voluntary associations in Ireland in developing the material resources of the country. Two chapters are occupied with a necessarily curtailed analysis of the work of the Congested Districts Board, and the powers and constitution of the Department of Agriculture and Technical Instruction for Ireland. The principal Institutions of Science and Art which have now passed under the control of the Department are briefly described. Special articles deal with agriculture, live-stock, sea and inland fisheries, shipbuilding, the linen industry, the modern Irish lace industry, and the art and cottage industries of Ireland."

I have quoted this statement from the preface because it states more succinctly, and probably more clearly than I could do, what was the object of the Department in publishing this handbook; and it is the merest justice to the Department to say that this handbook fully carries out the promise held out in the preface. No doubt, in many of the articles there are statements made, and in some there are views expressed, with which I at least cannot fully concur; but this must necessarily happen in a work of such general character as this is, and the highest praise is due to the authors for the ability, learning, candour, and care shown by them in the several articles to which their names are annexed, and by the Editor or his unnamed—but very able—subordinates in the unsigned articles.

Having said so much of the work as a whole, we must consider how much of it comes sufficiently within the scope of the *Irish Naturalist*, as

to the appropriateness between them. Six of the articles clearly do. Those on "The Topography and Geology of Ireland," and on "Irish Minerals and Building Stones," by Prof. Cole, F.G.S.; on "The Soils of Ireland" and "The Climate of Ireland," by Mr. J. R. Kilroe; "The Flora of Ireland," by Dr. Johnson; and "The Animals of Ireland," by Mr. G. H. Carpenter.

In addition to these, the articles on "The Dublin Museum of Science and Art," by Col. Plunkett; on "The Ponies of Connemara," by Dr. Ewart, F.R.S.; on "The Irish Cattle Industry," by Mr. Robert Bruce; and on "The Sea Fisheries of Ireland" and "Inland Fisheries," by Mr. W. S. Green; and the unsigned articles on "The National Library," "The Irish Horse-breeding Industry" and "Sheep-breeding in Ireland," are of great general interest to all who have the scientific, the economic, or even the general interest of the country before their eyes. The residue of the handbook relates to subjects which are too far apart from these ordinarily dealt with by the *Irish Naturalist* to be expressly reviewed in it.

To deal now with the six papers which come directly into the field of the *Irish Naturalist*, the first paper of Prof. Cole's—to which the second is in substance an appendix—in addition to being a very clear and interesting summary of the views now held of the early geological history of Ireland, is by its eloquence a worthy proem to the whole book of which it is the first paper. Those who read it as it should be read, can hardly fail to form a desire to see with their own eyes the scenes therein so vividly described.

To them, also, will appear the vast importance of noting, as *indices* of whether or not there were local conditions which would allow of such deposit being formed, in the North of Ireland—as in Scotland—the Lower Carboniferous, with beds of coal, as at Ballycastle, resting directly on much older schistose rocks; and, perhaps, most remarkable of all, the gap in the Devonian series which led Prof. J. Beete-Jukes to divide the series into two groups. Or, on the other hand, as in the case of the later Carboniferous strata in Leinster and Munster, which show conditions proving the gradual removal of a great load of Coal-measures and lower Carboniferous grits, which once lay over the Carboniferous limestone, and has, except in bits, now disappeared.

Mr. Kilroe's two papers on the soils and on the climate of Ireland, which immediately follow those of Prof. Cole, give a clear, succinct, and intelligent account of the subjects dealt with, as might be expected from the scientific position of the author.

Dr. Johnson's paper, which comes next, is of great interest, from the valuable bibliography of Irish botany which it contains, and which will give the intending visitor—no matter what branch of botany he may seek to pursue—the fullest means of knowing where to find the guide for his work. The last sentence of this paper is but too sadly true;—"It must be a matter of surprise that so much excellent work has been done, when it is remembered that botany has hitherto received no encouragement either in the Elementary Schools or in the Boys' Secondary (or Inter-

mediate) Schools of the country, and that in the Girls' Secondary Schools it has been treated as a polite accomplishment, largely taught and altogether examined theoretically."

The remaining paper, which deals directly with the subject matter with which the *Irish Naturalist* is mainly concerned, is that by Mr. Carpenter on "The Animals of Ireland." This paper is remarkable not only for the care with which it summarizes the points—both of similarity with, and of difference between, the faunas of Ireland and of Great Britain—but shows that wide grasp of the changes in local connections, now more than ever necessary to be firmly held by one who wishes his view of the relationship now existing to correspond to, and correlate with, the known facts of earlier geological history. This paper also points clearly out how the south-western "Lusitanian" and the northern "Arctic" forms mix and overlap in the West of Ireland. This, familiar as it is to anyone who has worked either at the fauna or the flora of the West of Ireland, is specially interesting to anyone whose acquaintance and knowledge of these overlapping forms is confined to those existing in Scotland, where, from the difference in latitude, the "Lusitanian" forms are comparatively few and the "Arctic" forms very numerous, and how in common forms like the Varying Hare (*Lepus variabilis*) this "Arctic" type is that which is found throughout, and gives its character to the entire country. This paper also points out most clearly and distinctly how in Ireland, and especially on the western coast, and most of all in the sea washing that western coast, the "Lusitanian" and the "Arctic" type overlap.

Mr. Carpenter has pointed out the different courses by which these two sets of animals came to the west coasts of Ireland; the earliest from the south, then that overborne by those across the land connection with Scotland and Scandinavia, and that communication finally cut off before the later flow of animals from the east, Dr. Scharf's "Siberian migration" could reach Ireland.

There are two points on which a more distinct statement of Mr. Carpenter's views would have been more satisfactory than the way in which they have been put forward. First, as to the remains of bear in Ireland, Mr. Carpenter evidently does not look on the modern European Bear (*Ursus arctos*) as the same species with the "Grizzly Bear" (*Ursus horribilis*). If so, then the Irish Cave Bear was a species now found not nearer than the "Barren Grounds" of British North America, or possibly than the Rocky Mountains.

Second, in the reference to the former extent of distribution of *Helix pisana*, there is no reference to the fact that both the Azores and Madeira are "Pelagic" islands, so that even a wide extension of the European coast line would fall very short of them. These are, however, very small points.

The short summary of the "Economic Zoology" which follows and concludes Mr. Carpenter's valuable treatise is of much interest. Even if the Irish farmer can congratulate himself on the absence of the Voles

and the Mole, the birds, molluscs and insect larvæ described, give great cause for anxiety.

This ends the list of those articles which deal directly with the matters over which the *Irish Naturalist* is concerned. There remain, however, a number of articles dealing with matters more or less closely connected with the subjects. As to some of these it is not necessary to say more than that the subject dealt with has been treated clearly and intelligently. As to four of these articles that, however, would not be enough. Prof. Ewart's article on "The Ponies of Connemara" is, as might be expected, a model of what a paper on that subject should be. In his account of the existing varieties, the physical features of the country which has produced these varieties, and, I am sorry to have to say, his view as to the probable result of the present unregulated system of replacing Connemara sires by Welsh cob or Hackney sires. Prof. Ewart also deserves great credit for the illustrations to his paper, which are most excellent.

Mr. Bruce's paper, which follows Prof. Ewart, gives a very clear and definite account of how the present "Kerry" and "Dexter," if they are to be taken as distinct breeds, has originated, and are now being kept up, and is of great interest to those interested in the question.

The only other papers which I can here refer to are Mr. Green's on "The Sea Fisheries of Ireland" and on "Inland Fisheries"; two papers in which the present conditions of the fisheries of Ireland are succinctly described.

There are other papers in this volume to which praise might well be given, there are many other papers well deserving of praise, but we know that the field to which praise from the *Irish Naturalist* is appropriate is not a large one, and it is better to end by saying too little than too much.

R. R. KANE.

IRISH SOCIETIES.

ROYAL ZOOLOGICAL SOCIETY.

Recent gifts include four Peafowl, from Sir J. Banks; a Black-headed Gull, from General Sir J. Davis; a Carrion Crow, from Mr. T. P. Hart; and two Barn Owls, from Mr. Brooke.

DUBLIN NATURALISTS' FIELD CLUB.

AUGUST 24.—EXCURSION TO LUCAN.—Twenty-five members attended. The party on arriving at Lucan walked from the Spa along the river-bank as far as the Salmon Leap and back. The day was beautifully fine and a good deal of collecting was done. After having tea at the Lucan Hotel the party returned to Dublin by the 7.30 tram.

BELFAST NATURALISTS' FIELD CLUB.

JULY 6. THE CAVE HILL.—The party numbered about twelve. They visited the old stone fort at Ballyvaston and the ruins of the old church, of which foundations only are to be seen. In the field containing the fort some of the members found the Adder's-tongue fern. From the summit of Cave Hill a line of forts was pointed out, one of which was visited.

AUGUST 10.—Benevenagh's attractions were spoiled by a very wet morning, so that only two members turned up at the station.

JULY 11-13. THE ANTRIM COAST ROAD.—Members and friends assembled at the Northern Counties Station on Thursday morning in time for the 9.55 train. Zoologists, geologists, and botanists were well represented; and the scientific results of the three days' work, when fully worked out, promise to be creditable to the working members, and a valuable addition to the "Proceedings" of the Club.

On arrival at Larne, the drive along the Coast Road was commenced. The first stopping-place was Waterloo, where the party spent some time examining the Lias and Rhætic beds. On the land side of the road the overlying beds of Greensand were next visited. Resuming seats, the party proceeded along the coast through the Black Cave tunnel to Ballygalley Head, where the well-known "corn sacks" were noted. Passing O'Halloran's Castle, a more modern structure diverted attention, namely, Ballygalley Castle, a small but quaint specimen of Scottish baronial architecture, built in 1625. The Ballyrudder gravels were next noted, being celebrated through the investigations conducted by the B.N.F.C. some years ago. At the "Madman's Window," on the south side of Glenarm, a considerable time was spent. Glenarm was the next stopping-place. The party visited the large Chalkquarry on the Larne road, and several good fossils were picked up. The premises and workings of the Iron Ore Company were next examined, and the processes explained.

The large landslips between Glenarm and Carnlough were observed with interest. The next stopping-place was on the north side of Carnlough, where a small stream was examined and some specimens of the fresh-water Limpet obtained. The best find of the day was *Helix intersecla*, being new to East Antrim. At Garron Point the party stopped again, and, sending the luggage up to the hotel, spent some time examining the cliffs and rocks.

On Friday, the 12th, the party divided, the main body continuing the investigations of the previous day, examining the old fort and the natural history of the undercliff. After lunch this section continued the drive round the coast road and up the beautiful Vale of Glenariff. In the meantime the walking party, leaving Garron Tower at 9 o'clock, ascended the steep cliffs at the back, and began the examination of the botany and zoology of the moorland and bogs comprising the plateau.

Everything being of value from these high grounds, a miscellaneous collection was made—plants, beetles, spiders, shells, moths, butterflies. The most important discovery of the day was a colony of Herring Gulls breeding beside one of the lakes, being the first inland breeding-place known in Ireland, although thousands breed on our sea-cliffs all round the coast. For this and other reasons the walk took longer than was anticipated; but fatigue was banished on meeting the first section at the teahouse in Glenariff. Here the party was increased by the addition of some members staying in Cushendall, and the drive down Glenariff was begun. Red Bay castle and caves gave rise to an animated discussion. At Cushendall a very pleasant evening was spent.

The following morning (Saturday) some of the members were making ornithological notes by 5 o'clock, while the photographic section was again early astir, and visited Waterfoot in search of artistic snapshots. After 8 o'clock breakfast, the party again mounted vehicles and drove to "Ossian's Grave." The "grave" was photographed, and the drive to Cushendun resumed.

On arriving here the celebrated caves in the Old Red Sandstone were visited and thoroughly explored. After inspecting the remains of Garra Castle, the steep ascent of Tornamoney Hill was undertaken, in order to visit Tornamoney cashel. The large circle of stones is between 50 and 60 feet in diameter, and has a chamber in the thickness of the walls. Another cashel on the opposite side of the hill was next visited, but it was found to be in bad preservation and hardly worth the climb. Descending the hill, Cushendun was again reached, and soon the drive back began; it was with regret that Parkmore was reached. After a quick run to Belfast the party separated.

AUGUST 24. THE GOBBINS.—It is now some thirty-three years since the B.F.N.C. visited and explored the district of Islandmagee known as "The Gobbins." On Saturday, 24th August, the Field Club again visited the district. About one-half of the party of seventy started by the 12.50 train for Ballycarry Station. Arriving there, the majority of the party soon reached the high ground overlooking the North Channel. Here they descended from the cars, and proceeded on foot to the shore. In former years it was somewhat difficult progress, but on this occasion it was easily undertaken by everyone, as convenient stiles and footbridges have been erected by the Northern Counties Railway Company. Passing the first headland, a fine comprehensive view of the coast was obtained. As soon as the features of the landscape had been grasped the "Smugglers' Cave" was explored.

Passing onwards, the path by the shore was followed. The railway company has now built a pathway leading round the foot of the Gobbins cliffs. This path has been carried round the foot of the headland well above high-water mark along the ledges of basalt, and where walls of rock used to meet the traveller in former visits he will now find short tunnels cut through the solid rock. Where a gaping chasm yawned there is now a hanging bridge constructed of bearers of rolled iron joists, with a footway of solid plank. The party was conducted by Mr. B. D.

Wise round this path till we reached the first of that great series of caves that are to be found at the foot of the Gobbins cliffs. An inspection revealed ferns and liverworts of many varieties. Mr. Wise, the Engineer of the Northern Counties Railway Company, explained the intention of the company to carry the path further round the cliffs to reach some more of these famous caves, and ultimately they hope to provide access to the group of seven caves further along the coast. The general opinion of the party was that in the dealing with the problem of opening up this district Mr. Wise deserved great credit for his treatment of the subject. In no case is the natural beauty destroyed. What has been done is in keeping with the natural harmonies of the place. It is, however, the geologist that can best gain an idea of the beauty and grandeur of the place. But the interest is not confined to past history; the banks and fields are gay with flowers. Bird life is abundant among the eyries of the cliffs; the Peregrine Falcon and the Herring Gull find a home in the fastnesses of the rocks. Butterflies, too, are in abundance through the fields, one member noting the rare Peacock Butterfly *Vanessa io*.

OBITUARY.

Eleanor A. Ormerod.

Miss E. A. Ormerod, the renowned authority on economic entomology, passed away, at her home, St. Albans, England, on July 22nd, aged 74 years. We feel it due to join in the universal tribute to her memory, since her work on many occasions was of the most direct benefit to Irish agriculture and industry. Many inquiries on injurious insects were sent to her from this country, and all were dealt with in her characteristically painstaking and thorough style. Of her the customary saying is no empty compliment—she leaves a vacant place that cannot be filled.

Martin F. Woodward.

As we go to press we learn with the deepest regret that a boat accident at Ballinakill, Co. Mayo, has caused the untimely death of this brilliant young zoologist, the son of Dr. Henry Woodward, of the British Museum, and Assistant to Prof. G. B. Howes, at the Royal College of Science, London. Mr. Woodward had been spending his vacation helping the research work carried on under the direction of the Inspectors of Fisheries. Returning with two companions on the night of the 15th September from Inishbofin, a squall struck the boat just at the entrance to Ballinakill Harbour, and she capsized. While the other two in the boat succeeded in reaching land, nothing has been seen or heard of Mr. Woodward. He has closed a career that promised to enrich zoology by much valuable morphological research by laying down his life in the cause of Irish industry and Irish science.

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THURSDAYS—ART AND INDUSTRIAL AND BOTANICAL DIVISIONS

	P.M.		Entrance from Kildare-street.
Nov. 28.	4.30	Col. Plunkett,	SOME NEW OBJECTS IN THE MUSEUM.
Dec. 5.	"	Mr. Coffey,	OGHAM STONES.
" 12.	"	Mr. Coffey,	EARLY CHRISTIAN METAL WORK.
" 19.	"	Col. Plunkett,	THE ENAMELS IN THE MUSEUM.
Jan. 9.	"	Mr. Brennan,	EMBROIDERY.
" 16.	"	Mr. Brennan,	CHURCH VESTMENTS.
" 23.	"	Count Plunkett.	
" 30.	"	Mr. Strickland.	METHODS OF ETCHING.
Feb. 6.	"	Mr. Strickland,	SOME WATER COLOUR PAINTERS.
" 13.	8.30	Prof. Johnson,	THE TOBACCO PLANT.
" 20.	"	Dr. Pethybridge,	MODES OF DISPERSAL OF FRUITS AND SEEDS.
" 27.	"	Mr. Lyster,	THE HISTORY OF THE ALPHABET.
Mar. 6.	"	Mr. Alabaster.	
" 13.	"	Prof. Johnson,	WEEDS, AND HOW TO GET RID OF THEM.

TUESDAYS—NATURAL HISTORY DIVISION.

			Entrance from Merrion-square.
Dec. 3.	4.30	Dr. Scharff,	STUDENTS' COLLECTIONS.
" 10.	"	Dr. Scharff,	IRISH MAMMALS.
" 17.	"	Mr. Nichols,	MARINE ZOOLOGICAL PRODUCTS.
Jan. 7.	8.30	Mr. Holt,	FISH.
" 14.	4.30	Mr. Lamplugh,	BOULDERS AND SHELLS FROM THE GLACIAL DRIFT.
" 21.	"	Mr. Ussher,	BIRDS' NESTS AND THEIR STRUCTURE.
" 28.	"	Mr. Carpenter,	ANIMAL GEOGRAPHY, I.
Feb. 4.	"	Mr. Carpenter,	ANIMAL GEOGRAPHY, II.
" 11.	8.30	Prof. Mettam,	THE SKELETON OF THE HORSE.
" 18.	"	Mr. B. Barrington,	WINGS OF IRISH BIRDS.
" 25.	"	Prof. Cole,	THE RELIEF MAP OF IRELAND.
Mar. 4.	"	Mr. Nichols,	DEEP SEA ANIMALS.

Some of the Demonstrations will be in the Afternoons and others in the Evenings.

The Evening Demonstrations will commence precisely at 8.35, but it is requested that Visitors will arrive before 8.30, as it is impossible for a speaker to be heard whilst persons are moving about; the door will be opened at 8 p.m.

The Afternoon Demonstrations will commence at 4.35, and Visitors are requested to be in the Museum at 4.30.

Tickets free on application, not more than a week before each Demonstration, at the Office in Leinster House, Kildare-street, but it is requested that no one will ask for more tickets than he is likely to use; in previous years on some occasions some persons have taken more tickets than they could use, thus preventing other persons from getting them.

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